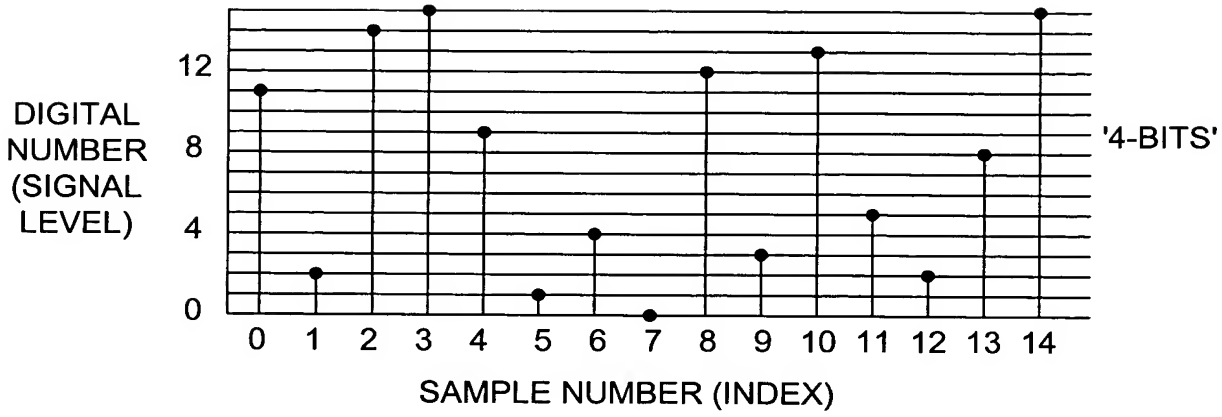

DIGITAL NUMBER (SIGNAL LEVEL)
12
8
4
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
SAMPLE NUMBER (INDEX)
'4-BITS'

FIG. 1

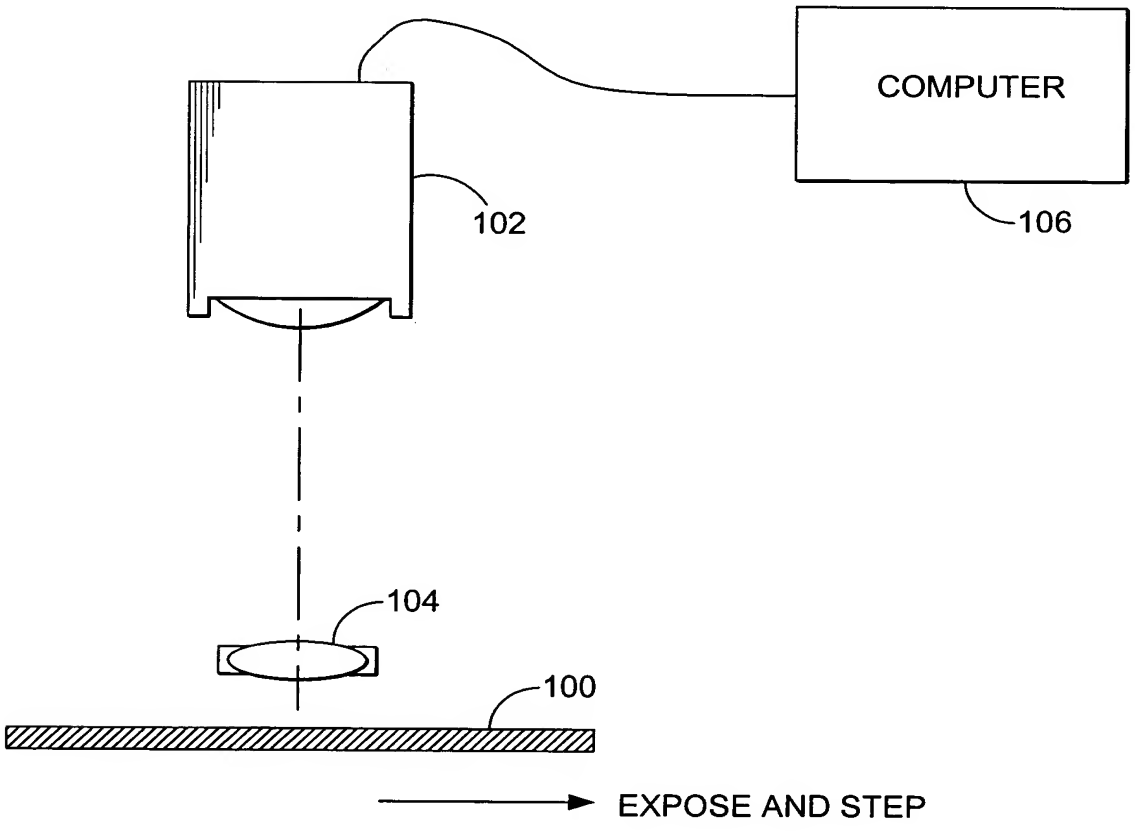

COMPUTER
102
106
104
100
EXPOSE AND STEP

FIG. 4

FIG. 2

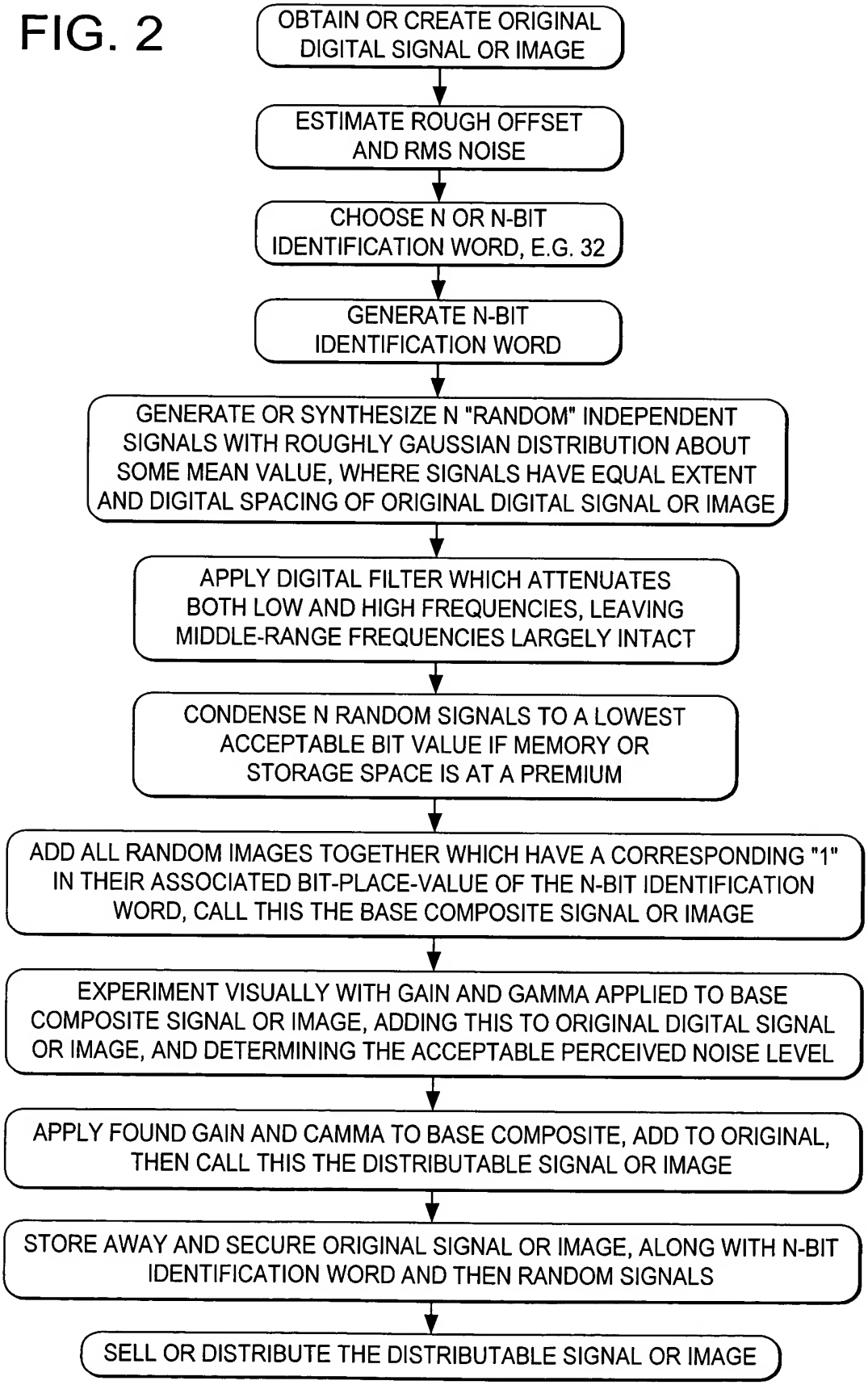
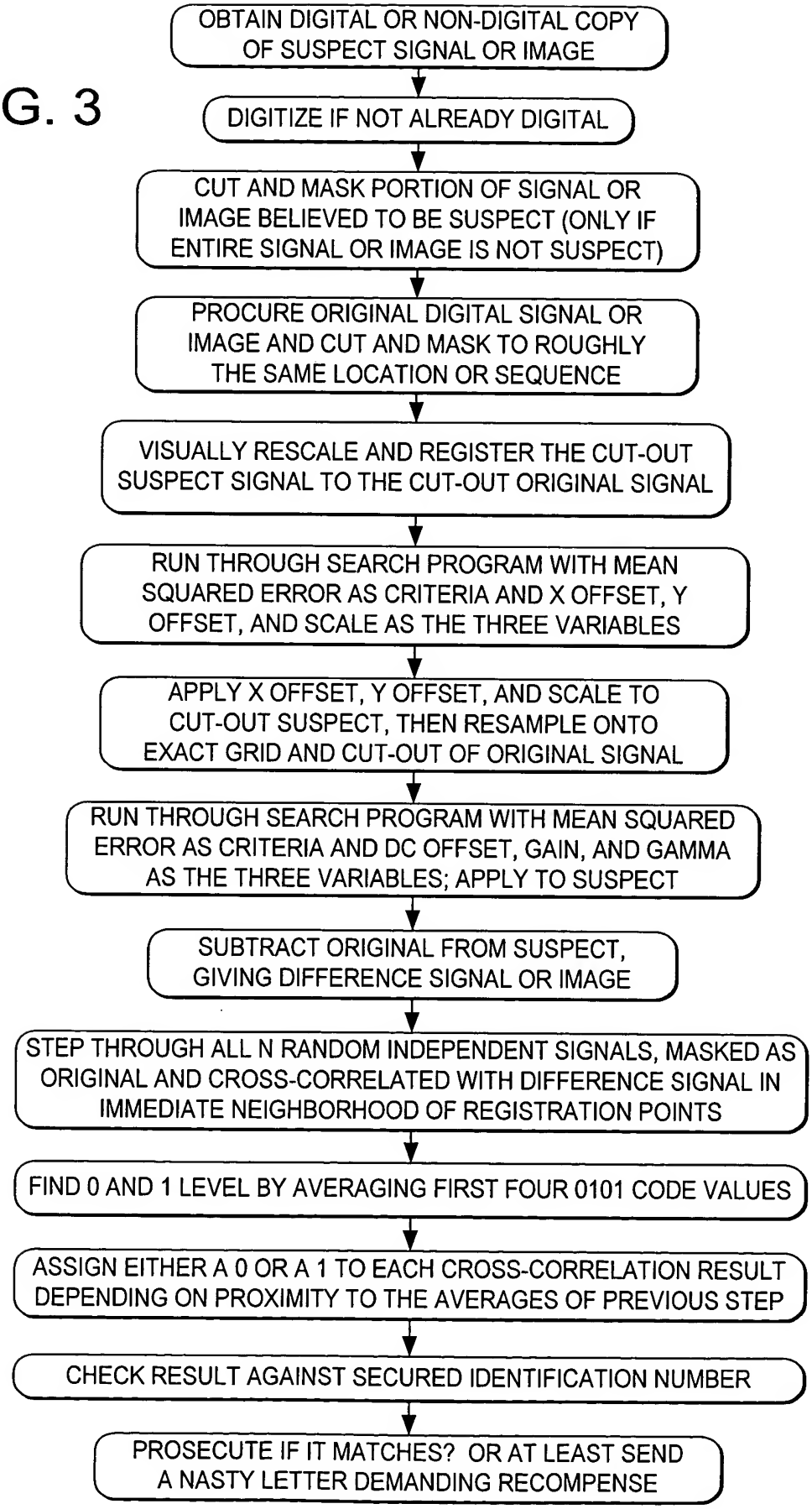

OBTAIN OR CREATE ORIGINAL DIGITAL SIGNAL OR IMAGE
ESTIMATE ROUGH OFFSET AND RMS NOISE
CHOOSE N OR N-BIT IDENTIFICATION WORD, E.G. 32
GENERATE N-BIT IDENTIFICATION WORD
GENERATE OR SYNTHESIZE N "RANDOM" INDEPENDENT SIGNALS WITH ROUGHLY GAUSSIAN DISTRIBUTION ABOUT SOME MEAN VALUE, WHERE SIGNALS HAVE EQUAL EXTENT AND DIGITAL SPACING OF ORIGINAL DIGITAL SIGNAL OR IMAGE
APPLY DIGITAL FILTER WHICH ATTENUATES BOTH LOW AND HIGH FREQUENCIES, LEAVING MIDDLE-RANGE FREQUENCIES LARGELY INTACT
CONDENSE N RANDOM SIGNALS TO A LOWEST ACCEPTABLE BIT VALUE IF MEMORY OR STORAGE SPACE IS AT A PREMIUM
ADD ALL RANDOM IMAGES TOGETHER WHICH HAVE A CORRESPONDING "1" IN THEIR ASSOCIATED BIT-PLACE-VALUE OF THE N-BIT IDENTIFICATION WORD, CALL THIS THE BASE COMPOSITE SIGNAL OR IMAGE
EXPERIMENT VISUALLY WITH GAIN AND GAMMA APPLIED TO BASE COMPOSITE SIGNAL OR IMAGE, ADDING THIS TO ORIGINAL DIGITAL SIGNAL OR IMAGE, AND DETERMINING THE ACCEPTABLE PERCEIVED NOISE LEVEL
APPLY FOUND GAIN AND CAMMA TO BASE COMPOSITE, ADD TO ORIGINAL, THEN CALL THIS THE DISTRIBUTABLE SIGNAL OR IMAGE
STORE AWAY AND SECURE ORIGINAL SIGNAL OR IMAGE, ALONG WITH N-BIT IDENTIFICATION WORD AND THEN RANDOM SIGNALS
SELL OR DISTRIBUTE THE DISTRIBUTABLE SIGNAL OR IMAGE

FIG. 3


OBTAIN DIGITAL OR NON-DIGITAL COPY OF SUSPECT SIGNAL OR IMAGE
DIGITIZE IF NOT ALREADY DIGITAL
CUT AND MASK PORTION OF SIGNAL OR IMAGE BELIEVED TO BE SUSPECT (ONLY IF ENTIRE SIGNAL OR IMAGE IS NOT SUSPECT)
PROCURE ORIGINAL DIGITAL SIGNAL OR IMAGE AND CUT AND MASK TO ROUGHLY THE SAME LOCATION OR SEQUENCE
VISUALLY RESCALE AND REGISTER THE CUT-OUT SUSPECT SIGNAL TO THE CUT-OUT ORIGINAL SIGNAL
RUN THROUGH SEARCH PROGRAM WITH MEAN SQUARED ERROR AS CRITERIA AND X OFFSET, Y OFFSET, AND SCALE AS THE THREE VARIABLES
APPLY X OFFSET, Y OFFSET, AND SCALE TO CUT-OUT SUSPECT, THEN RESAMPLE ONTO EXACT GRID AND CUT-OUT OF ORIGINAL SIGNAL
RUN THROUGH SEARCH PROGRAM WITH MEAN SQUARED ERROR AS CRITERIA AND DC OFFSET, GAIN, AND GAMMA AS THE THREE VARIABLES; APPLY TO SUSPECT
SUBTRACT ORIGINAL FROM SUSPECT, GIVING DIFFERENCE SIGNAL OR IMAGE
STEP THROUGH ALL N RANDOM INDEPENDENT SIGNALS, MASKED AS ORIGINAL AND CROSS-CORRELATED WITH DIFFERENCE SIGNAL IN IMMEDIATE NEIGHBORHOOD OF REGISTRATION POINTS
FIND 0 AND 1 LEVEL BY AVERAGING FIRST FOUR 0101 CODE VALUES
ASSIGN EITHER A 0 OR A 1 TO EACH CROSS-CORRELATION RESULT DEPENDING ON PROXIMITY TO THE AVERAGES OF PREVIOUS STEP
CHECK RESULT AGAINST SECURED IDENTIFICATION NUMBER
PROSECUTE IF IT MATCHES? OR AT LEAST SEND A NASTY LETTER DEMANDING RECOMPENSE

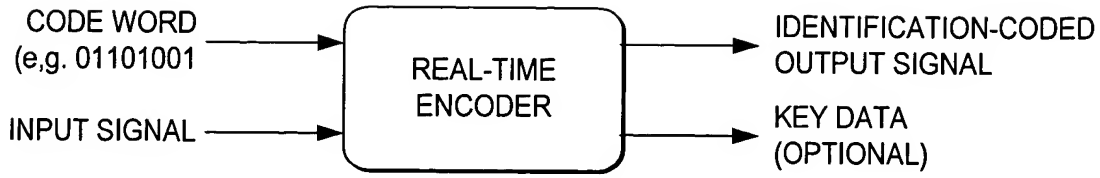

CODE WORD
(e,g. 01101001
INPUT SIGNAL
REAL-TIME
ENCODER
IDENTIFICATION-CODED
OUTPUT SIGNAL
KEY DATA
(OPTIONAL)

FIG. 5

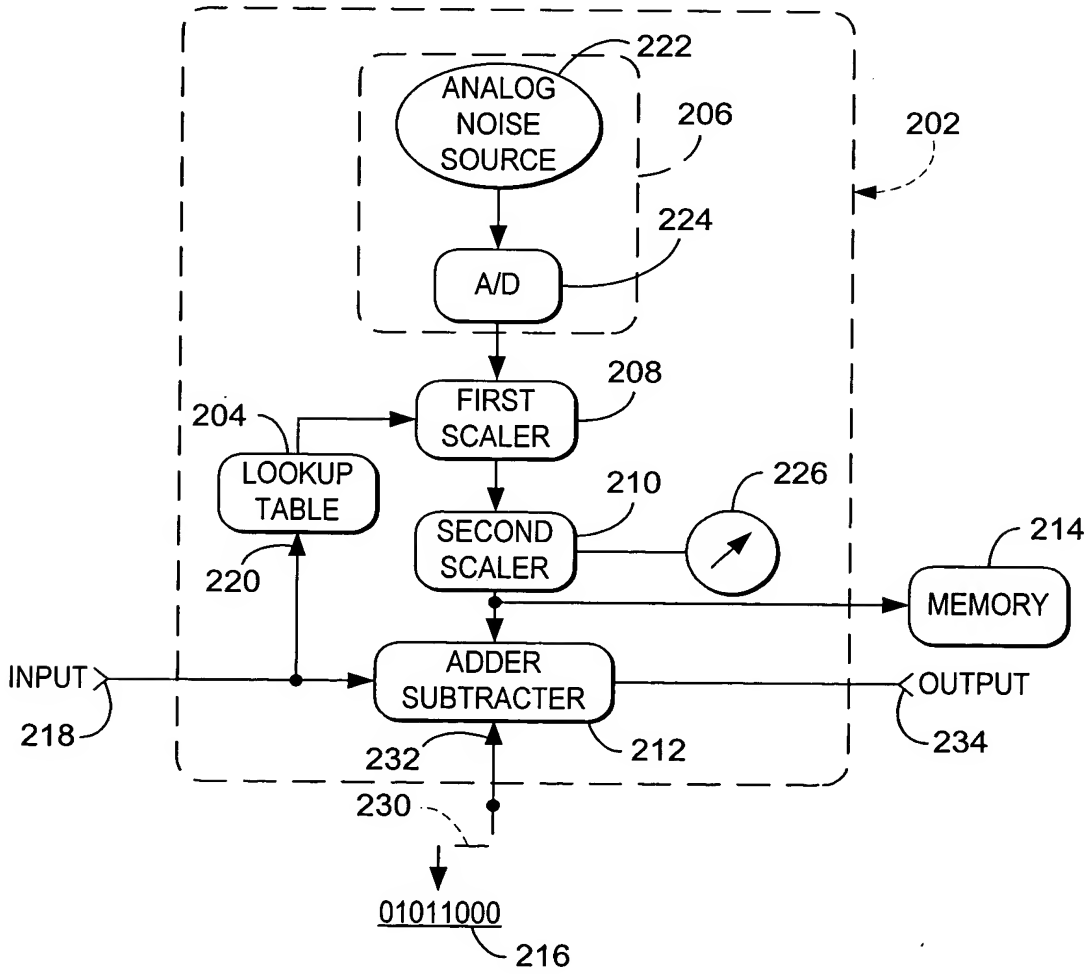

222
ANALOG
NOISE
SOURCE
206
202
224
A/D
208
204
FIRST
SCALER
LOOKUP
TABLE
210
226
SECOND
SCALER
214
MEMORY
220
INPUT
ADDER
SUBTRACTER
OUTPUT
218
212
234
232
230
01011000
216

FIG. 6

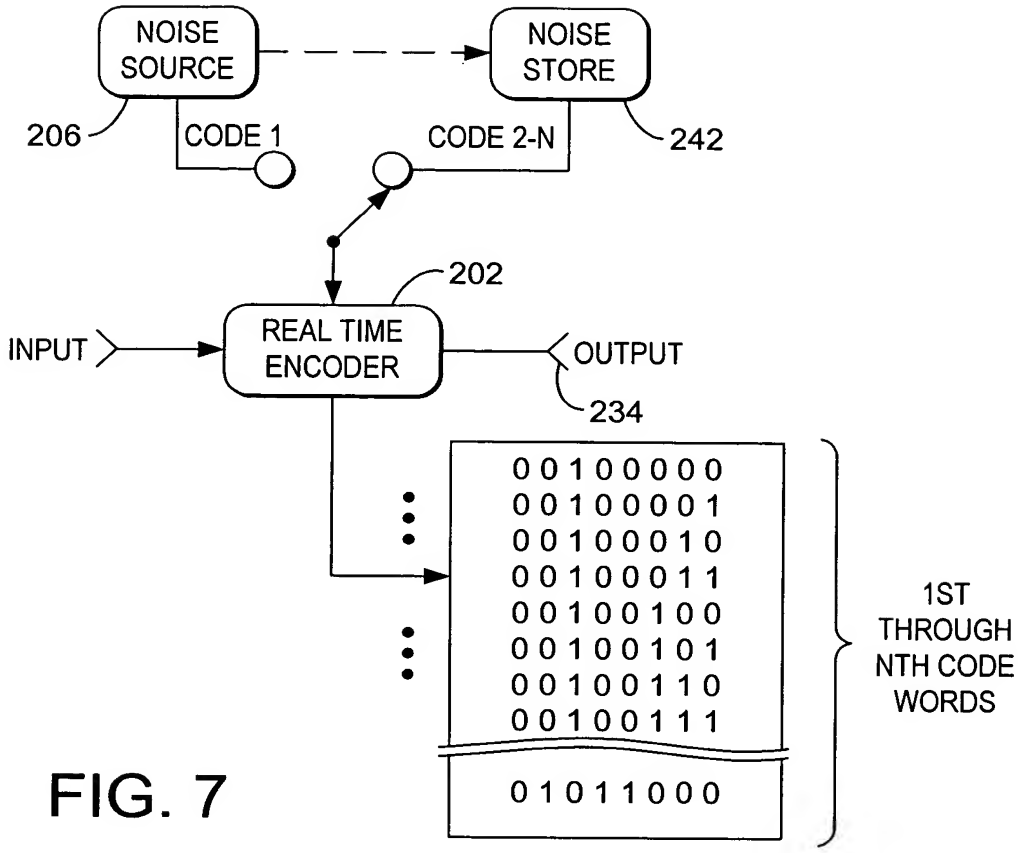

NOISE SOURCE
NOISE STORE
206
CODE 1
CODE 2-N
242
202
INPUT
REAL TIME ENCODER
OUTPUT
234
0 0 1 0 0 0 0 0
0 0 1 0 0 0 0 1
0 0 1 0 0 0 1 0
0 0 1 0 0 0 1 1
0 0 1 0 0 1 0 0
0 0 1 0 0 1 0 1
0 0 1 0 0 1 1 0
0 0 1 0 0 1 1 1
0 1 0 1 1 0 0 0
1ST THROUGH NTH CODE WORDS

FIG. 7

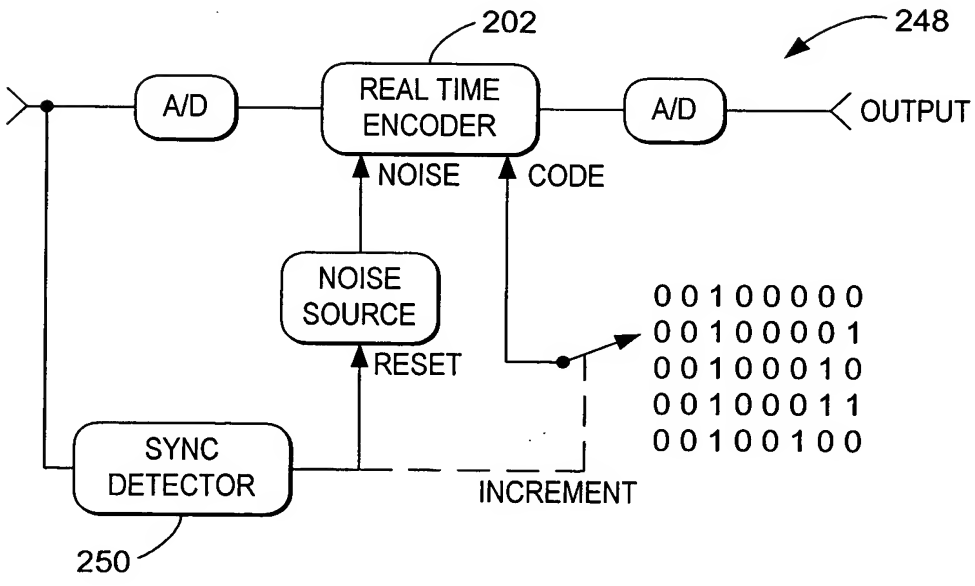

202
248
A/D
REAL TIME ENCODER
A/D
OUTPUT
NOISE
CODE
NOISE SOURCE
RESET
0 0 1 0 0 0 0 0
0 0 1 0 0 0 0 1
0 0 1 0 0 0 1 0
0 0 1 0 0 0 1 1
0 0 1 0 0 1 0 0
SYNC DETECTOR
INCREMENT
250

FIG. 8

FIG. 9A

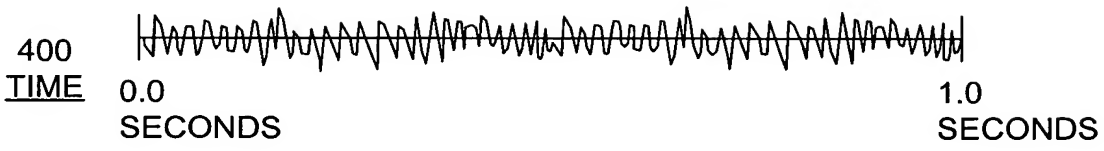


FIG. 9B

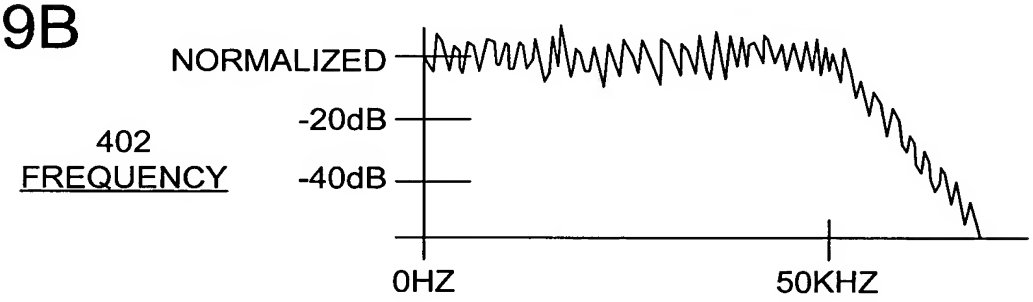


FIG. 9C

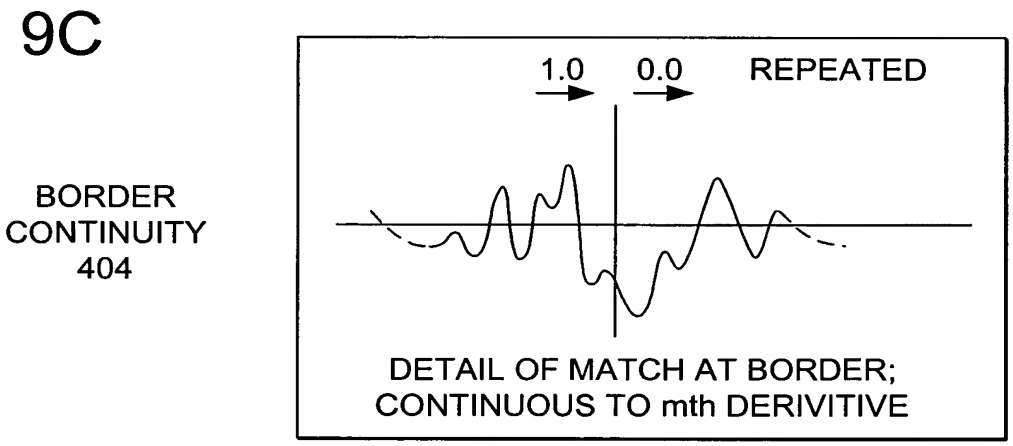


FIG. 10

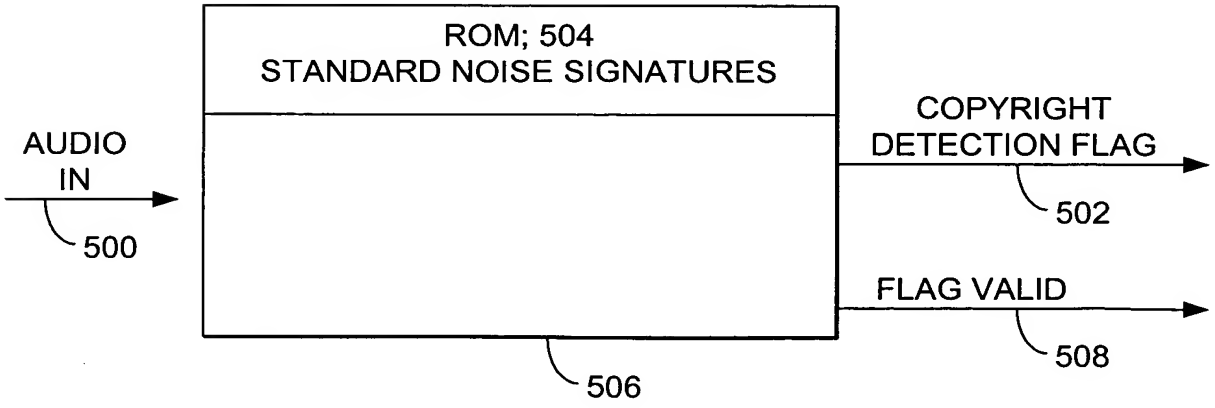


FIG. 11

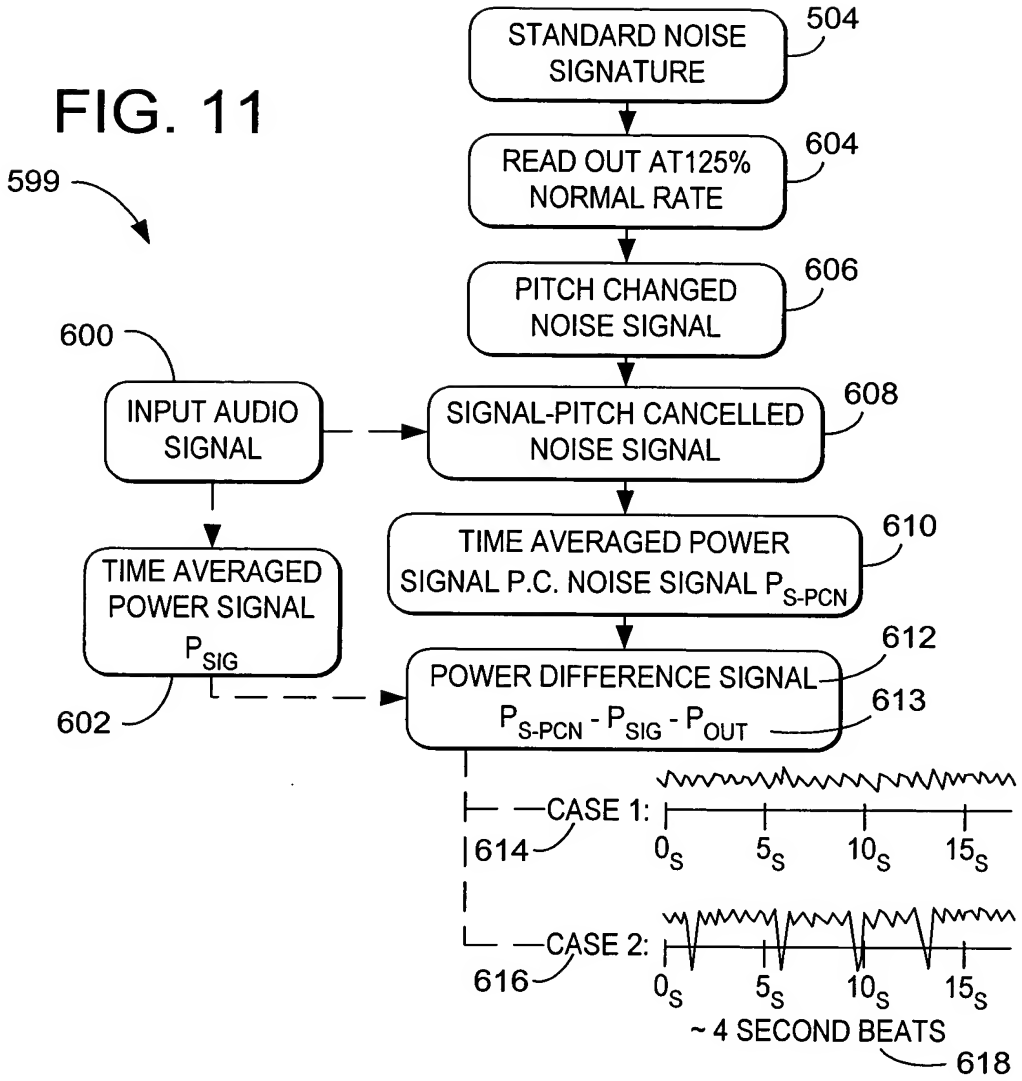
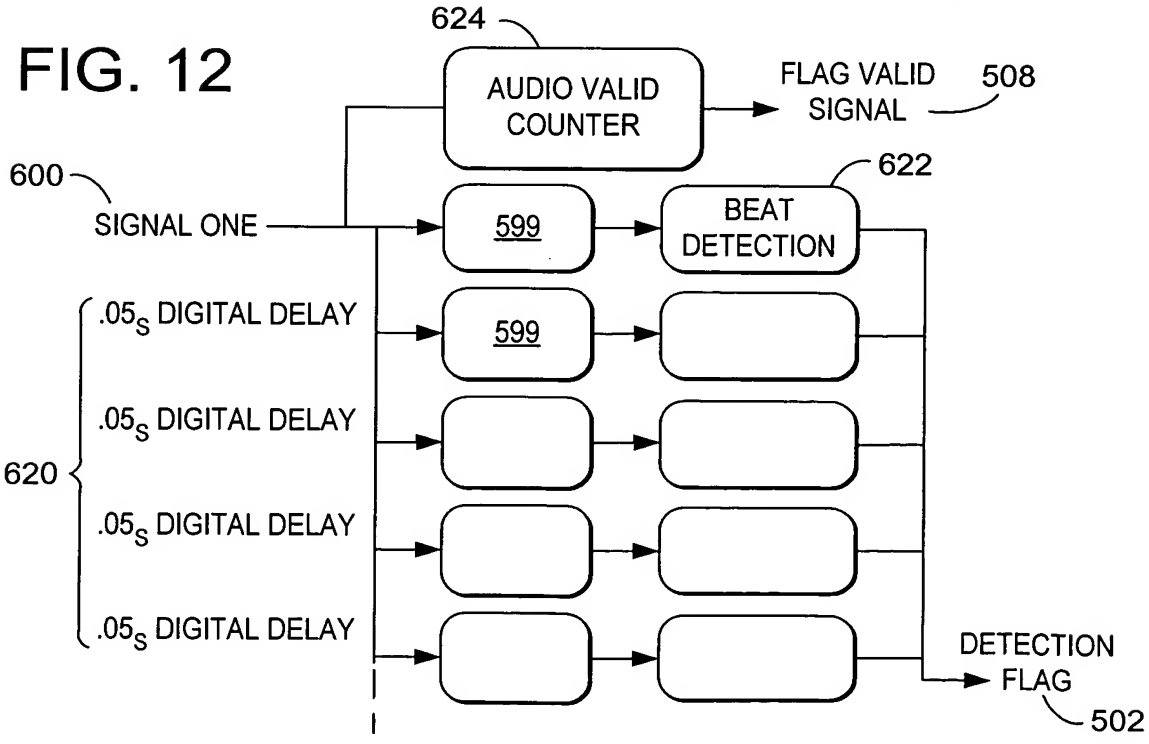

599
STANDARD NOISE SIGNATURE
504
READ OUT AT125% NORMAL RATE
604
PITCH CHANGED NOISE SIGNAL
606
600
INPUT AUDIO SIGNAL
SIGNAL-PITCH CANCELLED NOISE SIGNAL
608
TIME AVERAGED POWER SIGNAL P.C. NOISE SIGNAL P_{S-PCN}
610
TIME AVERAGED POWER SIGNAL P_{SIG}
602
POWER DIFFERENCE SIGNAL $P_{S-PCN} - P_{SIG} - P_{OUT}$
612
613
CASE 1:
614
0_S 5_S 10_S 15_S
CASE 2:
616
0_S 5_S 10_S 15_S
~ 4 SECOND BEATS
618

FIG. 12


624
AUDIO VALID COUNTER
FLAG VALID SIGNAL
508
600
SIGNAL ONE
622
599
BEAT DETECTION
599
620
.05$_S$ DIGITAL DELAY
.05$_S$ DIGITAL DELAY
.05$_S$ DIGITAL DELAY
.05$_S$ DIGITAL DELAY
DETECTION FLAG
502

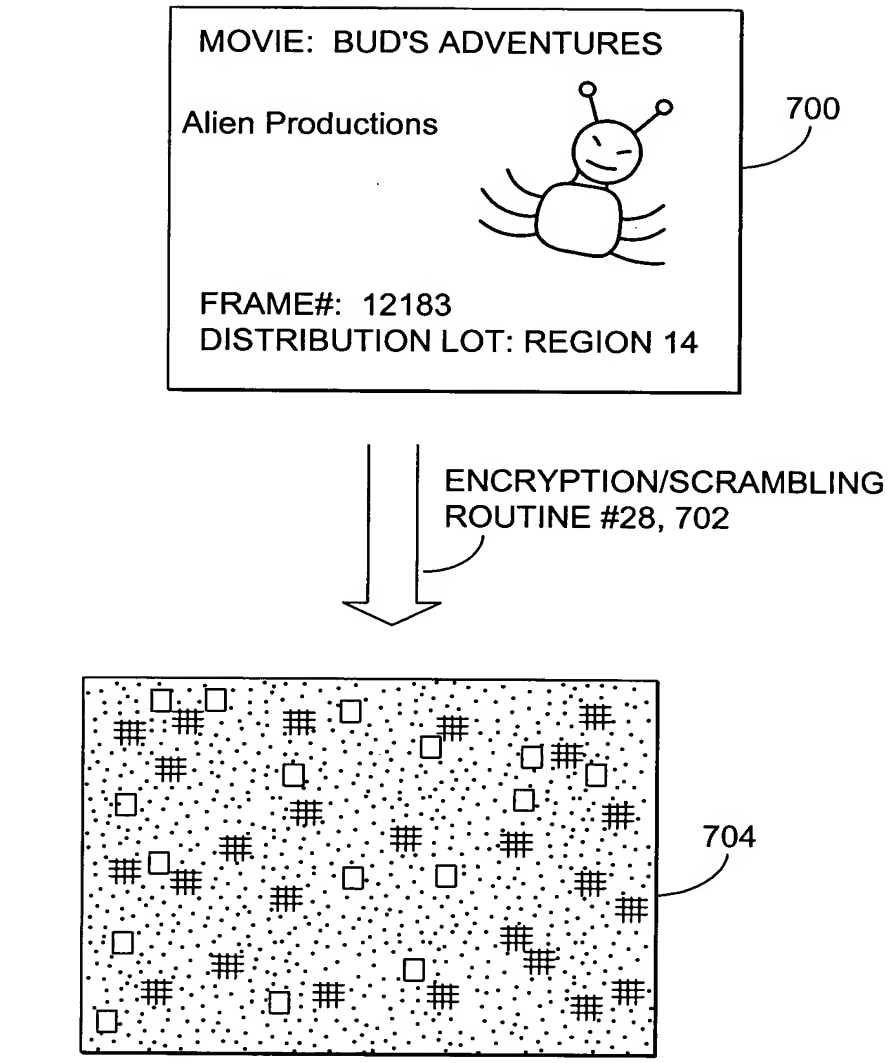
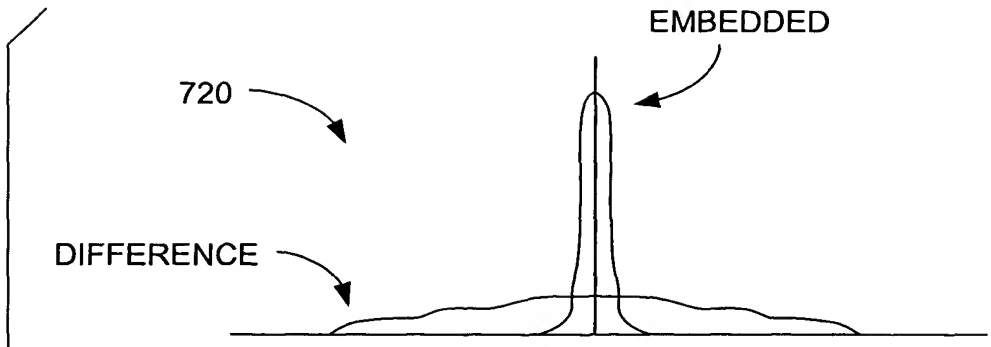
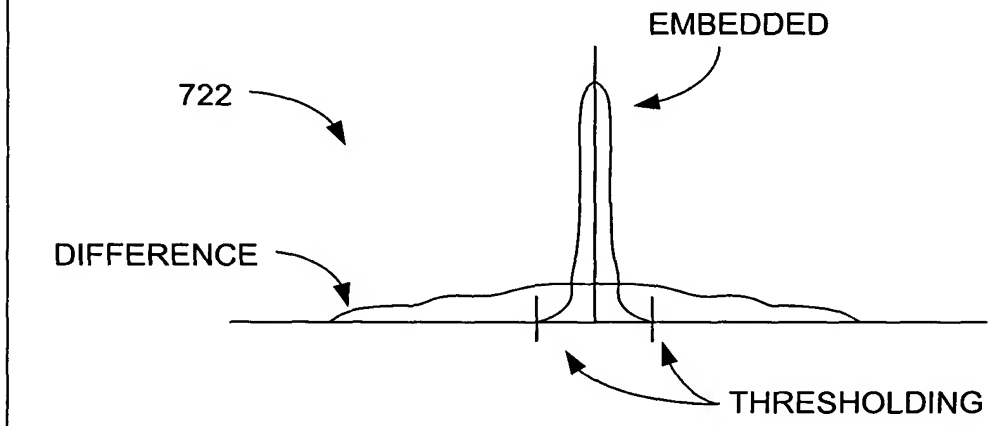

MOVIE: BUD'S ADVENTURES
Alien Productions
FRAME#: 12183
DISTRIBUTION LOT: REGION 14
700
ENCRYPTION/SCRAMBLING
ROUTINE #28, 702
704
PSEUDO-RANDOM MASTER SNOWY IMAGE
(SCALED DOWN AND ADDED TO FRAME 12183)

FIG. 13



MEAN-REMOVED HISTOGRAMS OF DIFFERENCE SIGNAL AND KNOWN EMBEDDED CODE SIGNAL



MEAN-REMOVED HISTOGRAMS OF FIRST DERIVATIVES (OR SCALER GRADIENTS IN CASE OF AN IMAGE)

FIG. 14

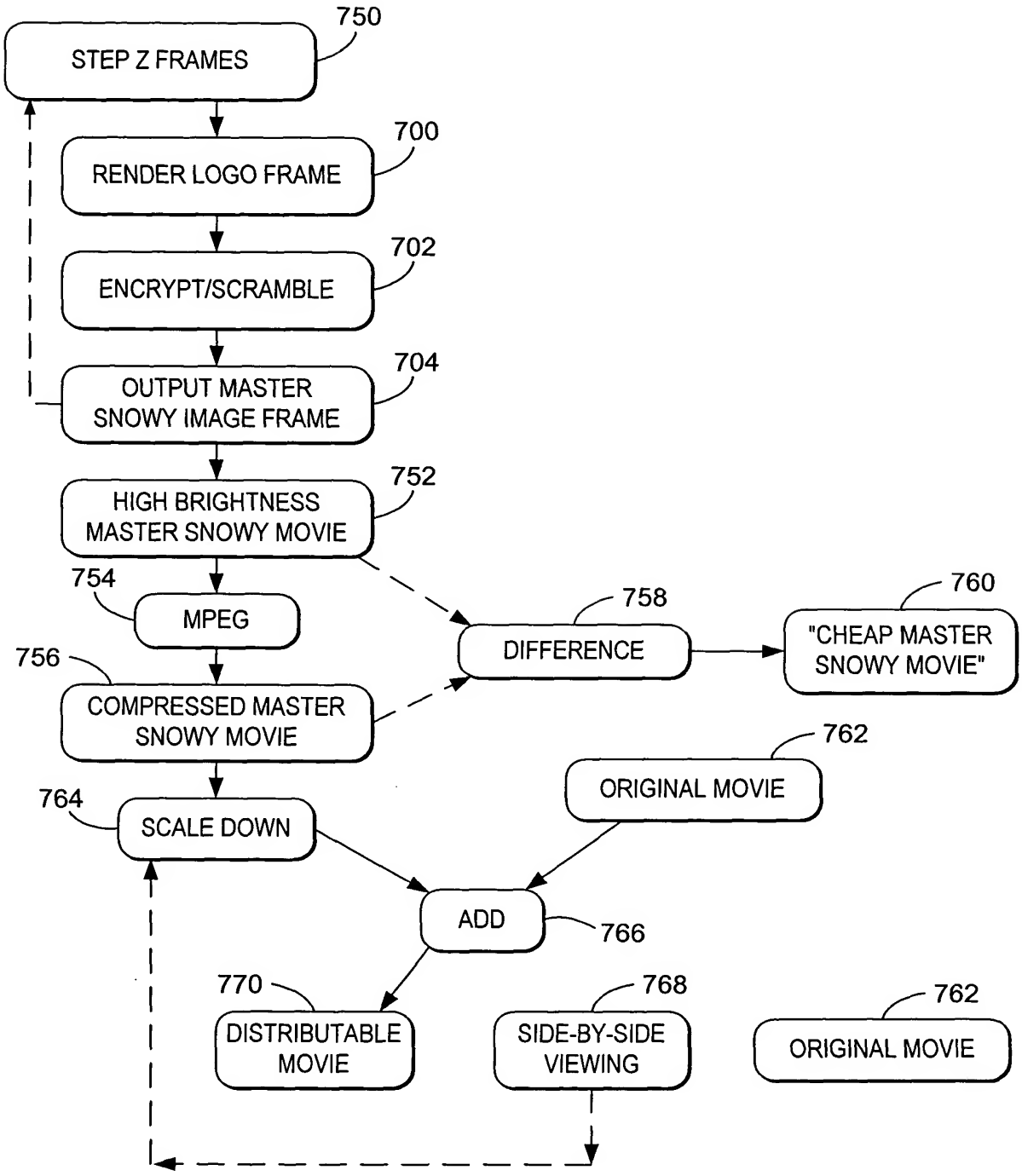

750
STEP Z FRAMES
700
RENDER LOGO FRAME
702
ENCRYPT/SCRAMBLE
704
OUTPUT MASTER SNOWY IMAGE FRAME
752
HIGH BRIGHTNESS MASTER SNOWY MOVIE
754
MPEG
756
COMPRESSED MASTER SNOWY MOVIE
758
DIFFERENCE
760
"CHEAP MASTER SNOWY MOVIE"
762
ORIGINAL MOVIE
764
SCALE DOWN
ADD
766
770
DISTRIBUTABLE MOVIE
768
SIDE-BY-SIDE VIEWING
762
ORIGINAL MOVIE

FIG. 15

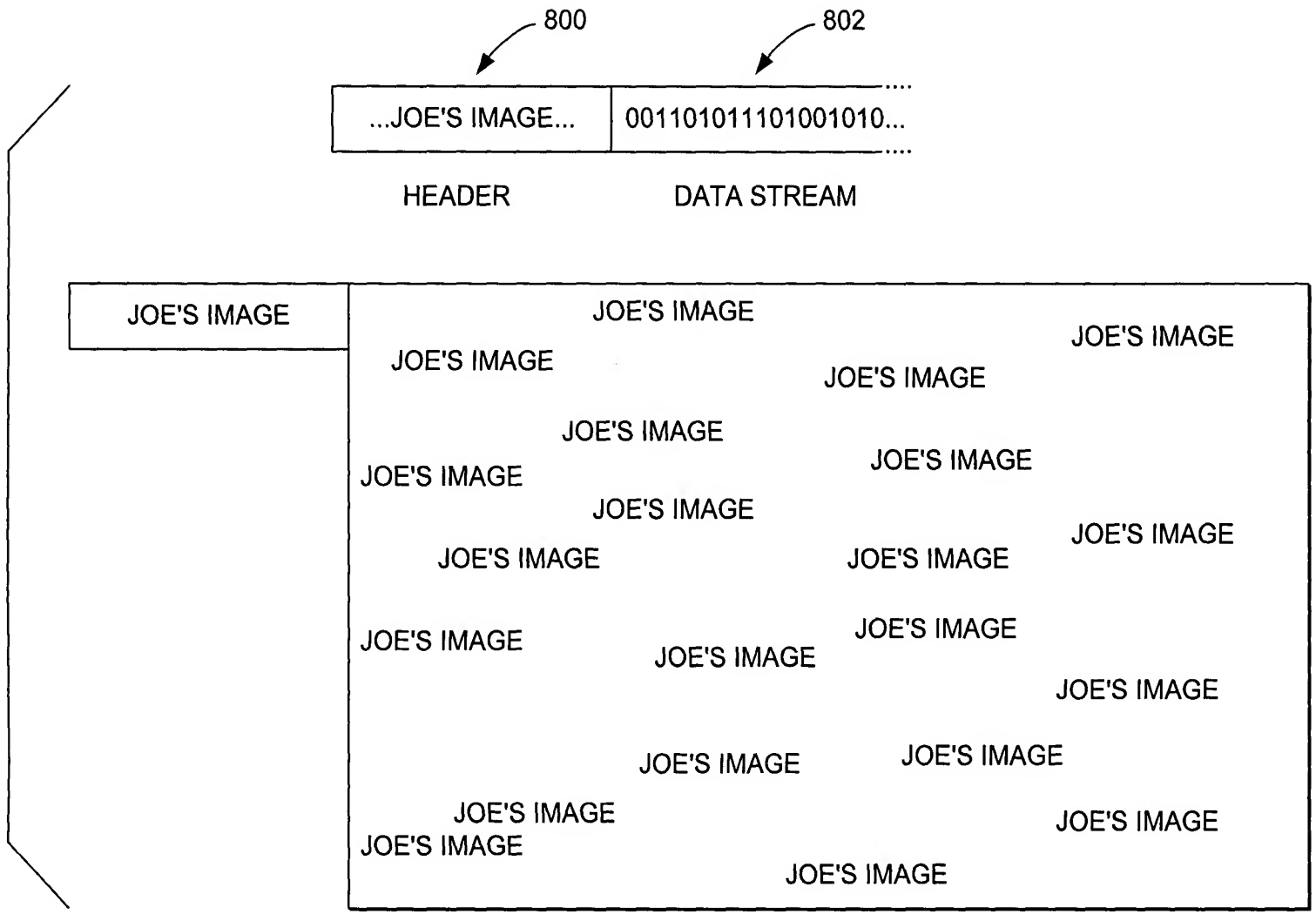
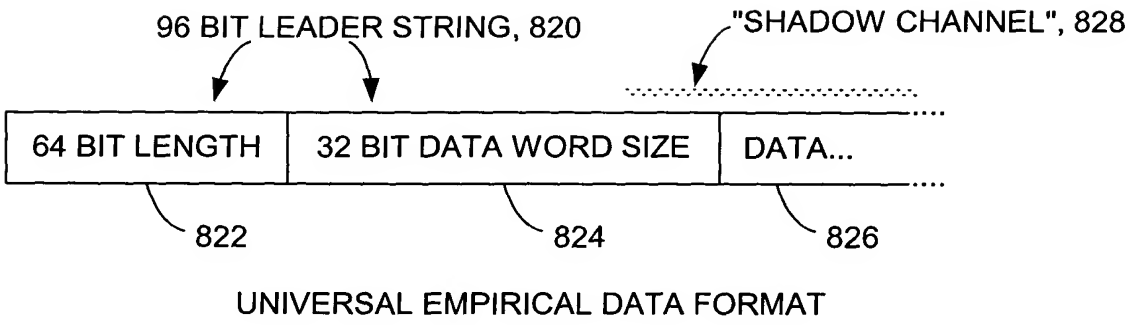

800
802
...JOE'S IMAGE...
001101011101001010...
HEADER
DATA STREAM
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE
JOE'S IMAGE

FIG. 16



UNIVERSAL EMPIRICAL DATA FORMAT

FIG. 17

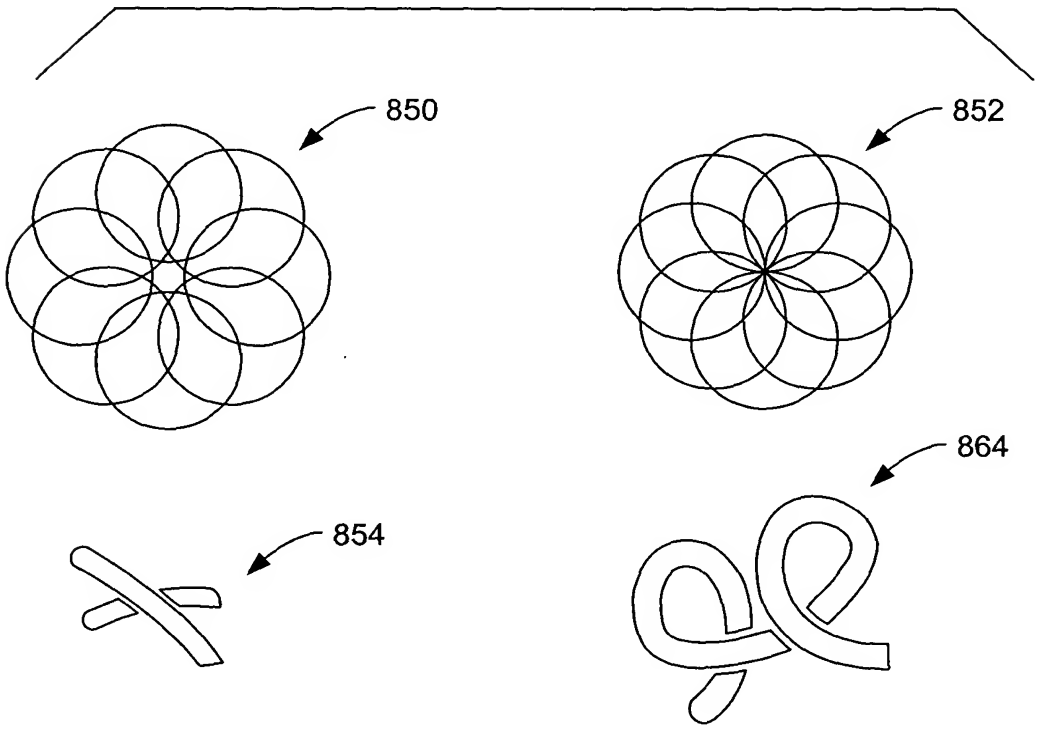
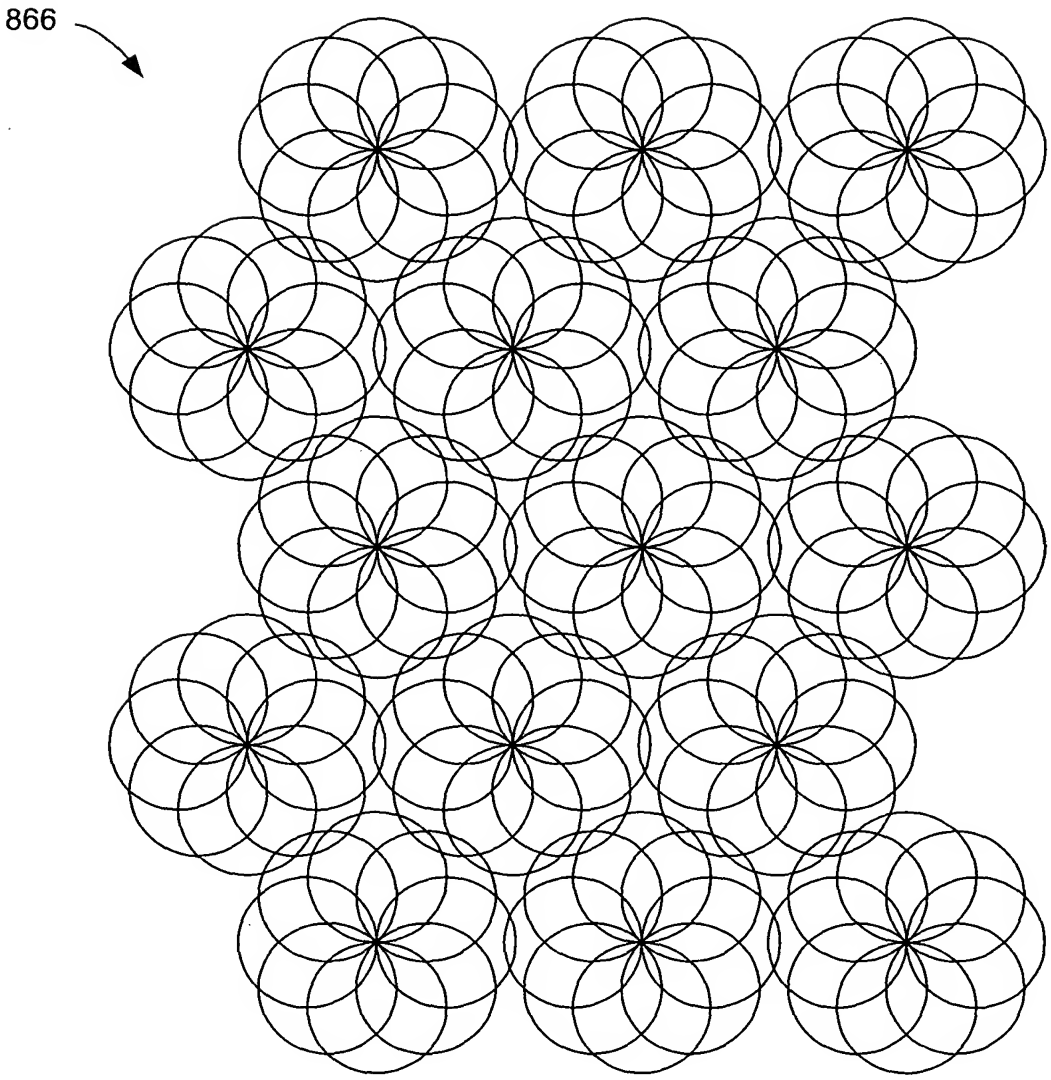


FIG. 18



QUEST FOR MOSAICED KNOT PATTERNS WHICH "COVER" AND ARE COEXTENSIVE WITH ORIGINAL IMAGE; ALL ELEMENTAL KNOT PATTERNS CAN CONVEY THE SAME INFORMATION, SUCH AS A SIGNATURE, OR EACH CAN CONVEY A NEW MESSAGE IN A STEGANOGAPHIC SENSE

FIG. 19

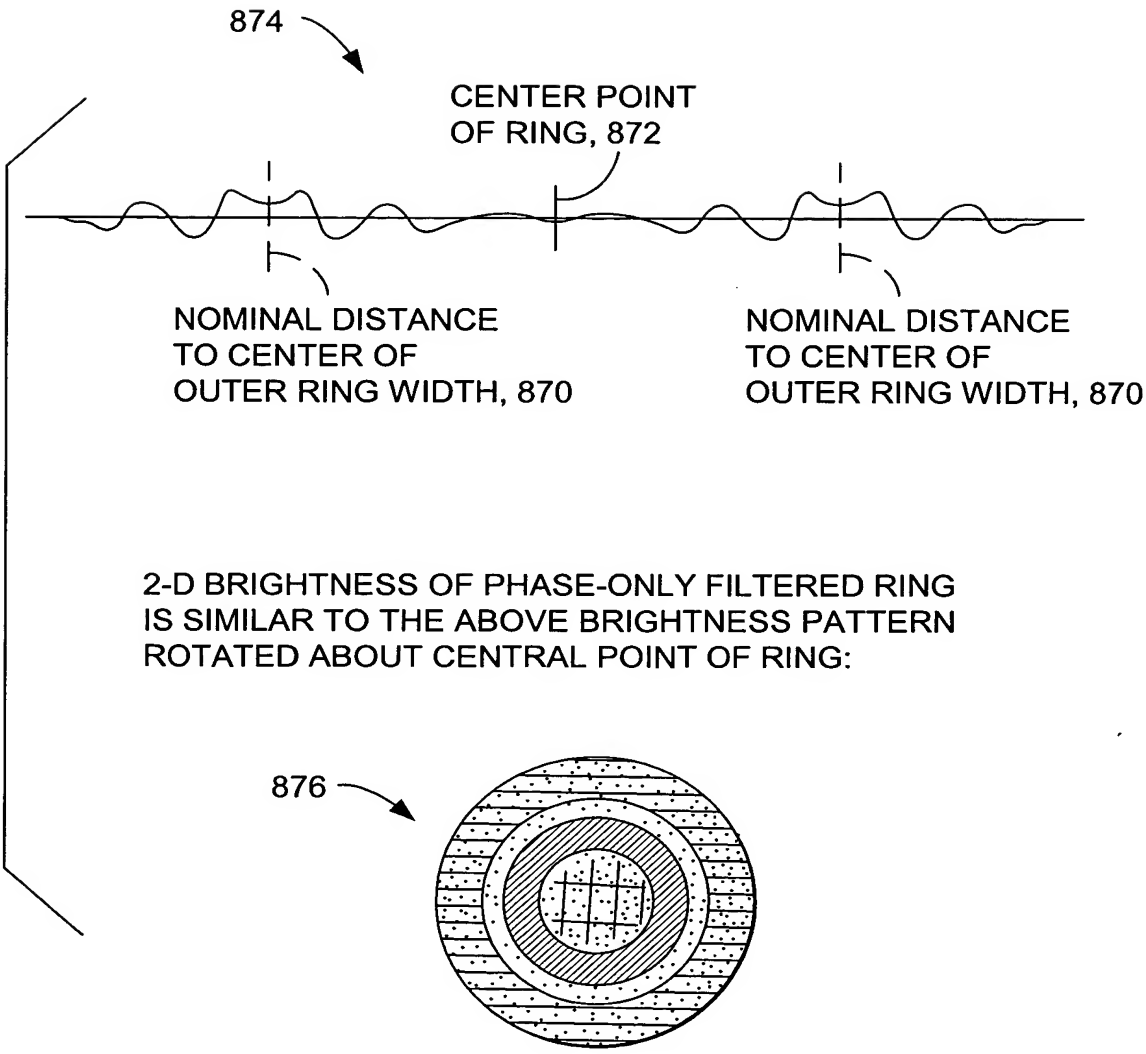
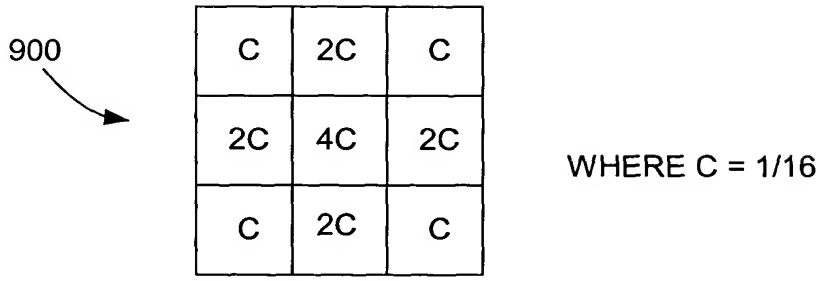
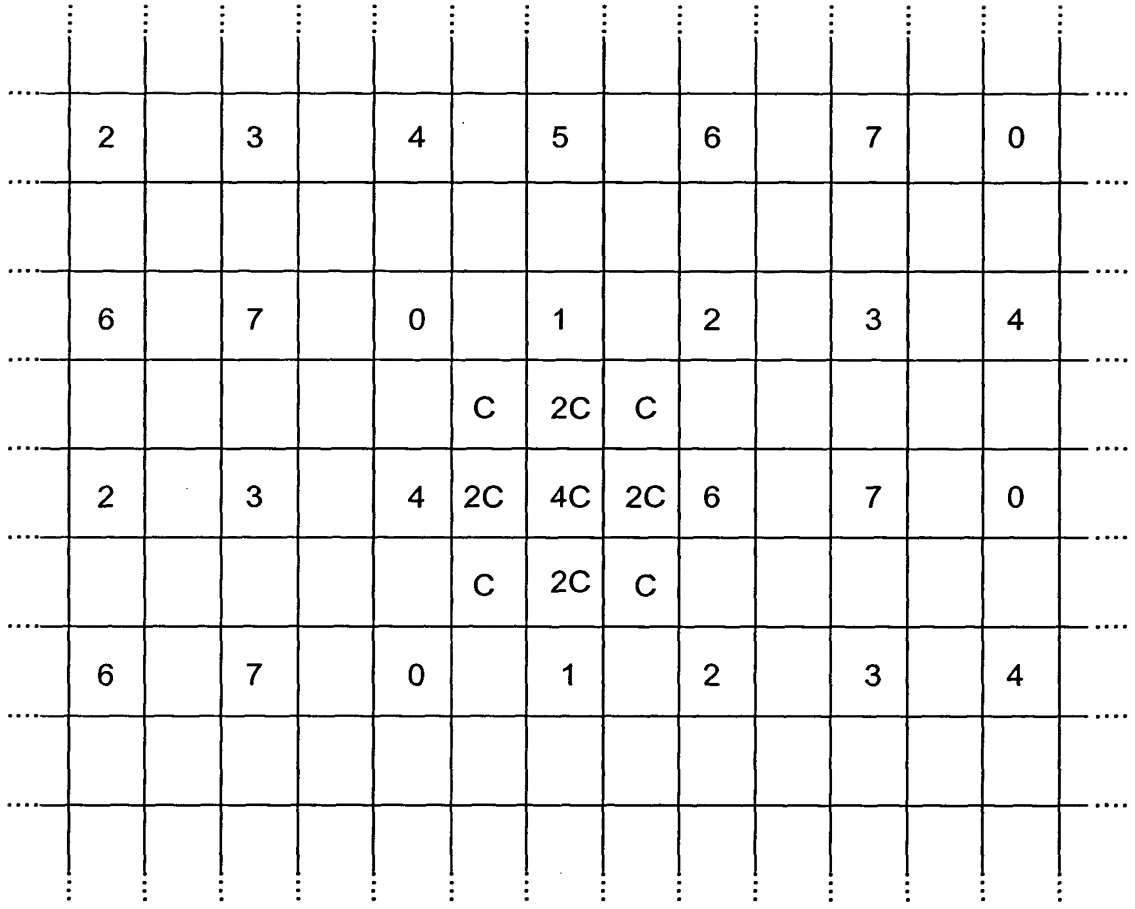

874
CENTER POINT
OF RING, 872
NOMINAL DISTANCE
TO CENTER OF
OUTER RING WIDTH, 870
NOMINAL DISTANCE
TO CENTER OF
OUTER RING WIDTH, 870
2-D BRIGHTNESS OF PHASE-ONLY FILTERED RING
IS SIMILAR TO THE ABOVE BRIGHTNESS PATTERN
ROTATED ABOUT CENTRAL POINT OF RING:
876

FIG. 20



ELEMENTARY BUMP (DEFINED GROUPING OF PIXELS WITH WEIGHT VALUES)

FIG. 21A



EXAMPLE OF HOW MANY ELEMENTARY BUMPS, 900, WOULD BE ASSIGNED LOCATIONS IN AN IMAGE, AND THOSE LOCATIONS WOULD BE ASSOCIATED WITH A CORRESPONDING BIT PLANE IN THE N-BIT WORD, HERE TAKEN AS N=8 WITH INDEXES OF 0-7. ONE LOCATION, ASSOCIATED WITH BIT PLANE "5", HAS THE OVERLAY OF THE BUMP PROFILE DEPICTED.

FIG. 21B

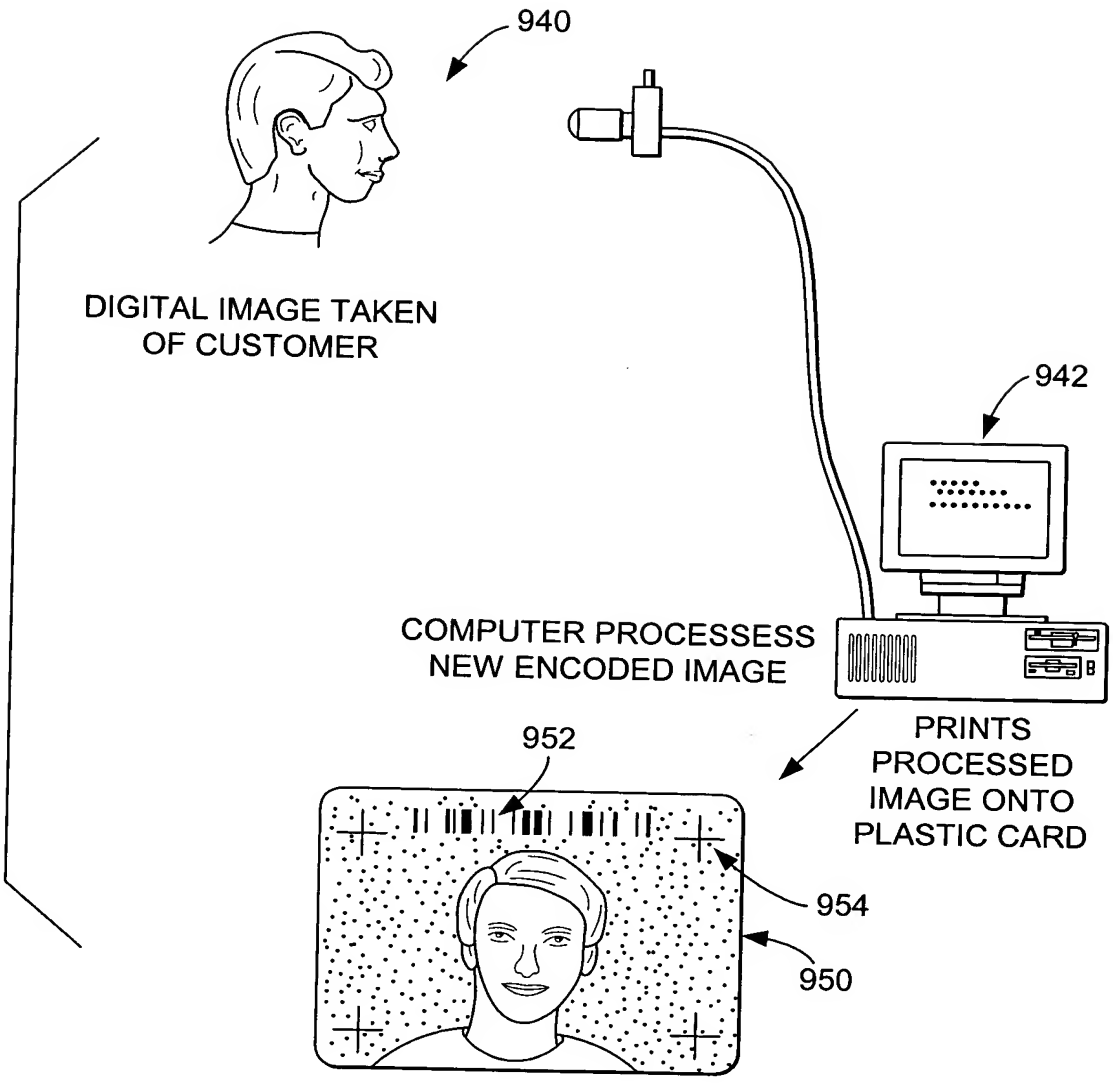
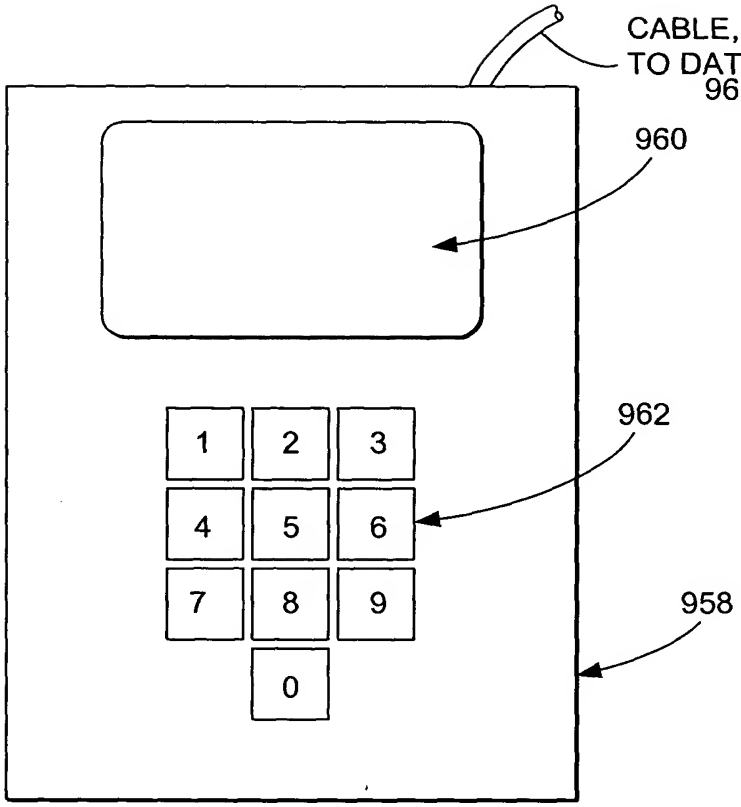

940
DIGITAL IMAGE TAKEN
OF CUSTOMER
942
COMPUTER PROCESSESS
NEW ENCODED IMAGE
PRINTS
PROCESSED
IMAGE ONTO
PLASTIC CARD
952
954
950

FIG. 22



CONTAINS RUDIMENTARY OPTICAL SCANNER, MEMORY BUFFERS, COMMUNICATIONS DEVICES, AND MICROPROCESSOR

CONSUMER MERELY PLACES CARD INTO WINDOW AND CAN, AT THEIR PREARRANGED OPTION, EITHER TYPE IN A PERSONAL IDENTIFICATION NUMBER (PIN, FOR ADDED SECURITY) OR NOT. THE TRANSACTION IS APPROVED OR DISAPPROVED WITHIN SECONDS.

FIG. 23

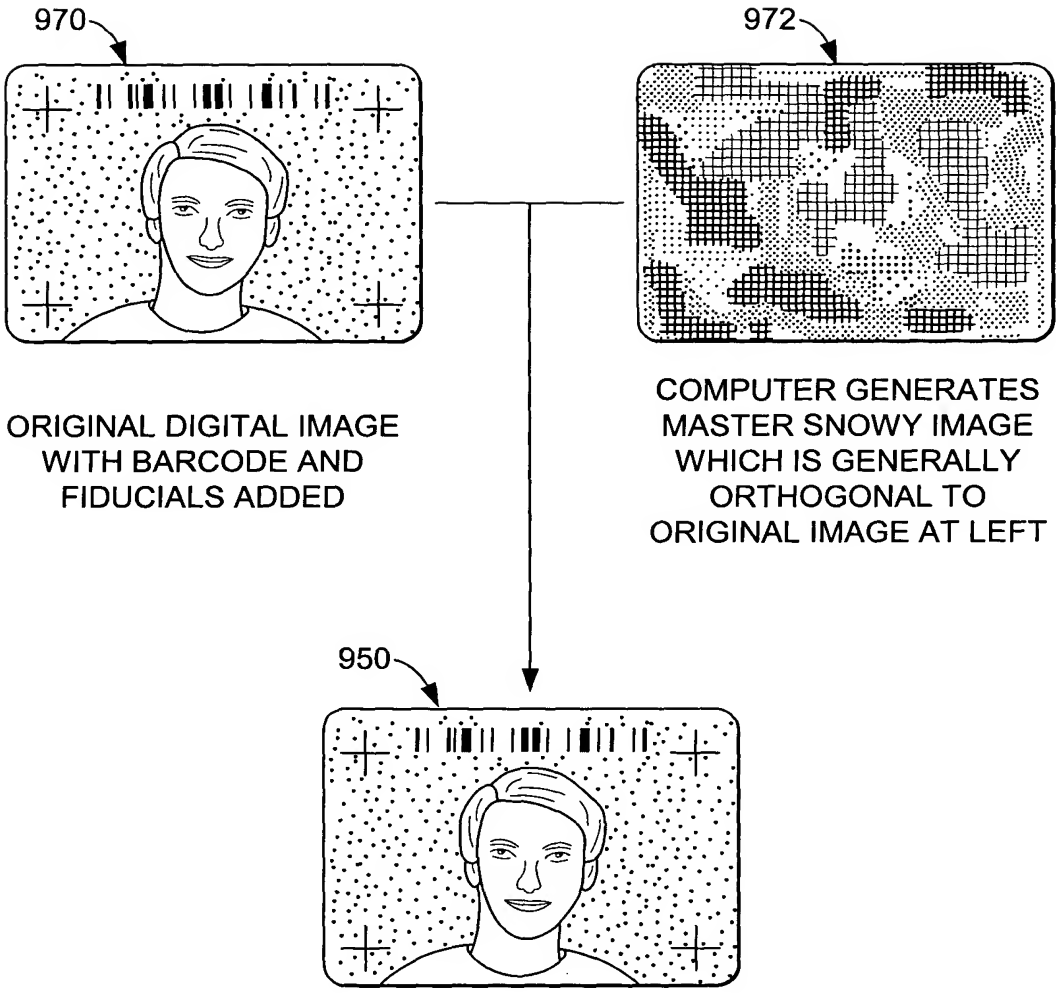

970
972
ORIGINAL DIGITAL IMAGE WITH BARCODE AND FIDUCIALS ADDED
COMPUTER GENERATES MASTER SNOWY IMAGE WHICH IS GENERALLY ORTHOGONAL TO ORIGINAL IMAGE AT LEFT
950
COMBINED TO FORM PERSONAL CASH CARD

FIG. 24

TYPICAL TRANSACTION STEPS

1. READER SCANS IMAGE ON CARD, STORES IN MEMORY, EXTRACTS PERSON'S ID
2. OPTIONAL: USER KEYS IN PIN NUMBER
3. READER CALLS CENTRAL ACCOUNT DATA NETWORK, HANDSHAKES
4. READER SENDS ID, (PIN), MERCHANT INFORMATION, AND REQUESTED TRANSACTION AMOUNT TO CENTRAL NETWORK
5. CENTRAL NETWORK VERIFIES ID, PIN, MERCHANT INFO, AND ACCOUNT BALANCE
6. IF OK, CENTRAL NETWORK GENERATES TWENTY-FOUR SETS OF SIXTEEN DISTINCT RANDOM NUMBERS, WHERE THE RANDOM NUMBERS ARE INDEXES TO A SET OF 64K ORTHOGONAL SPATIAL PATTERNS
7. CENTRAL NETWORK TRANSMITS FIRST OK, AND THE SETS OF RANDOM NUMBERS
8. READER STEPS THROUGH THE TWENTY-FOUR SETS

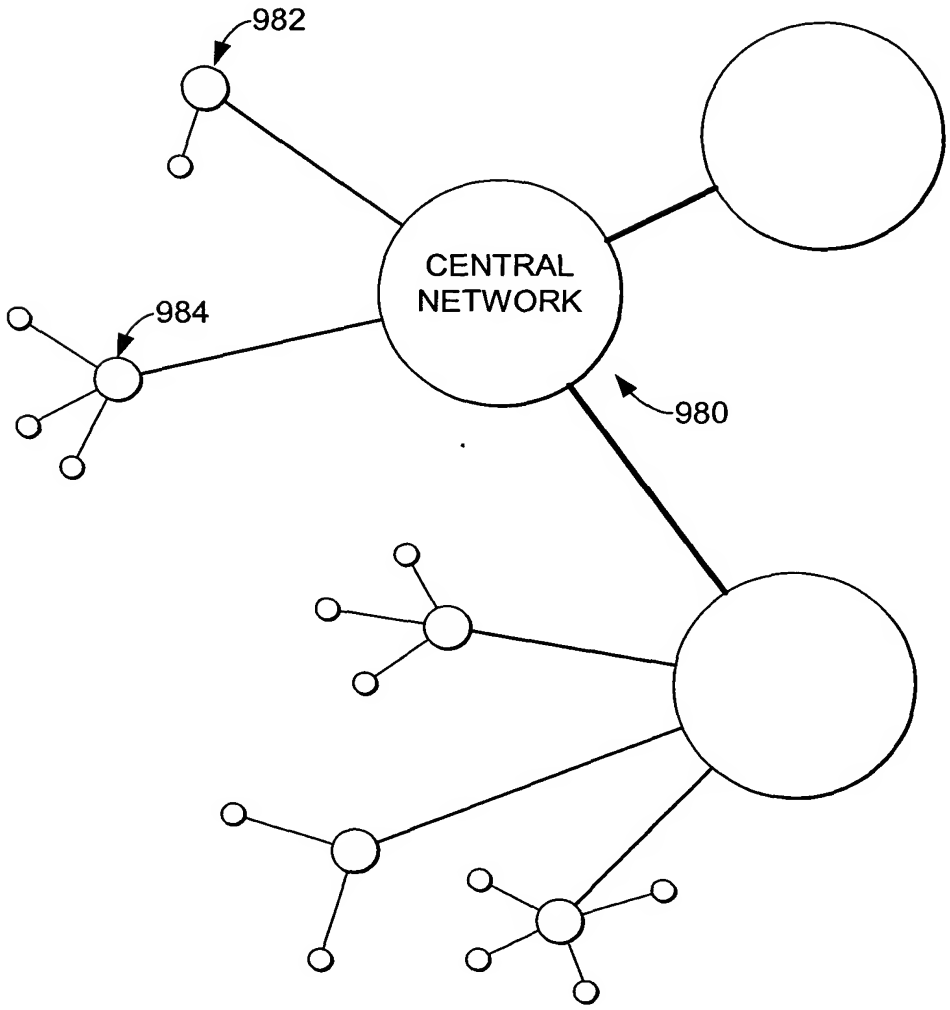
8A. READER ADDS TOGETHER SET OF ORTHOGONAL PATTERNS

8B. READER PERFORMS DOT PRODUCT OF RESULTANT PATTERN AND CARD SCAN, STORES RESULT

9. READER TRANSMITS THE TWENTY-FOUR DOT PRODUCT RESULTS TO CENTRAL NETWORK
10. CENTRAL NETWORK CHECKS RESULTS AGAINST MASTER
11. CENTRAL NETWORK SENDS FINAL APPROVAL OR DENIAL
12. CENTRAL NETWORK DEBITS MERCHANT ACCOUNT, CREDITS CARD ACCOUNT

FIG. 25

THE NEGLIGIBLE-FRAUD CASH CARD SYSTEM



A BASIC FOUNDATION OF THE CASH CARD SYSTEM IS A 24-HOUR INFORMATION NETWORK, WHERE BOTH THE STATIONS WHICH CREATE THE PPHYSICAL CASH CARDS, 950, AND THE POINT-OF-SALES, 984, ARE ALL HOOKED UP TO THE SAME NETWORK CONTINUOUSLY

FIG. 26

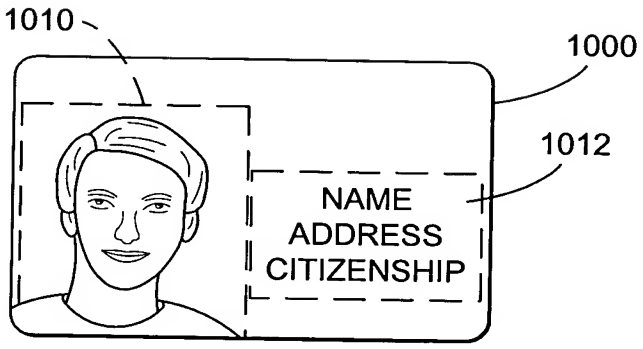


FIG. 27